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## Medicinal plants used to treat livestock diseases in Eastern Ghats of Namakkal district of Tamil Nadu

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### Abstract

The use of herbal medicine for human ailments has dwindled over the past few decades with the advent of allopathy, and if it is still being used as a viable practice for livestock ailment is not well known. The aim of this study was to document the use of medicinal plants for veterinary practices by people living in this Kolli hills area. The study documented 19 plant species as medicine are used to cure various diseases such as mastitis, enteritis, arthritis, stomatitis, scabies, ulcers, glossitis, body weakness, bone fractures, skin infection, chronic wound, dysentery, ephemeral fever, maggot wound and insect bite salivation from the mouth, wounding, and conjunctivitis in animals. Among them *Azadirachta indica* (40%) had the highest usage. The present investigation pointed out the tribal people in Namakkal District have traditional information to manage medicine have been reported for the first time in India. This study revealed most of the medicinal plants used by the community of study area consist phytochemical in the leaf, stem, bark and rhizome. Therefore, there is a necessary to generate awareness among the local population towards the sustainable utilization and conservation of ethno veterinary medicinal plants.

**Keywords:** Eastern Ghats, ethno veterinary practice, livestock, diseases

### Introduction

To keep animals healthy, traditional healing practices have been applied for centuries and have been passed down orally from generation to generation. In addition, ethno veterinary medicines cover people's knowledge, skills, methods, practices, and beliefs about the care of their animals<sup>[4]</sup>. In many poor rural areas ethno veterinary medicine can play an important role in animal production and livelihood development and often becomes the only available means for farmers to treat ill animals<sup>[1]</sup>. Livestock raisers in the past used plant-based medicine, as they traditionally acquired the knowledge of classifying, diagnosing, preventing and treating common livestock ailments using herbal resources available easily and free of cost.

Documentation of this indigenous knowledge is valuable for wider use of traditional practices in treating livestock ailments. This study shows that traditional medicine, mainly involving the use of medicinal plants, is playing a significant role in meeting the livestock healthcare in Tamil Nadu, and hence is a viable practice. Easy access to herbal resources and their free or low cost along with acceptance to traditional herbal medicine and lack of modern healthcare facilities in the rural areas are viewed as the reasons for herbal treatment being continued as a viable practice for cattle ailments. The knowledge documented from the livestock producers could also be used to manage the country's livestock healthcare system, and improve the lives and livelihoods<sup>[6]</sup>.

### Materials and methods

**Description of study Area:** Kolli hills of the study was conducted in the Namakkal District. The Kolli hills lying between 11°30'00'' N latitude and 78°15'00'' E longitude. It is situated in the Namakkal District of Tamil Nadu above the river Cauvery, covering an area of about 503 km<sup>2</sup>. Physiographically, it is a hilly region with altitude ranging from 180m at the foothill to 1415m at the plateau which was reported by Henry *et al.* 1987. The slop of this region varies from gentle to very steep. Geologically, the study area occupied by the hill is highly undulating, cut by a network of streams flowing in all directions, But mostly in the Eastern and South eastern directions and ultimately draining into river.

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Animal husbandry is an allied activity of agriculture as well but it could not keep pace with the developmental work undertaken in the field of modern agricultural techniques. The common livestock found in these districts are cows, buffaloes, sheep, goats, pigs apart from poultry birds, which include fowls and ducks. The state of Tamil Nadu has the most diverse floral distribution among all the states in India. Tamil Nadu is ethno botanically a rich state, having a wide variety of medicinal plants (950 spp.), which provide health security to the indigenous people depending upon traditional systems of medicine [5].

### Methodology

The presented information was gathered through questionnaire, personal interviews and a discussion among the village elder's peoples, the herbal medicine practitioners and other traditional healers in their local language. The

questionnaire allowed descriptive response on the plant prescribed, such as documented as to vernacular names parts used and medicinal uses. The authors collected the information about the use of medicinal plants interviewing the informants in the local language (*Tamil*) from the community both in their settlements and visiting the remote places, where they graze their animals. A sample of plant specimens was collected and preserved following systematic herbarium procured for taxonomic confirmation.

### Data analysis

Cluster analysis was performed using software PAST Version 3 to determine how different ailments and plant family are clustering based on their frequency of occurrence and frequency of use respectively.

### Results and Discussion

**Table 1:** Plant species used as veterinary folk medicine

S. No	Botanical Name	Family	Vernacular Name	Part Used	Methods of Medicine preparation and administration
1.	<i>Acorus calamus</i> L.	Acoraceae	Vashambu	Rhizome	The equal quantity of fresh rhizomes of this plant and <i>Cyperus rotundus</i> are ground well with water and made into paste and applied externally to treat the skin infestation in cattle
2.	<i>Adenia hondala</i> (Gaertn.) W.J.de Wil	Passifloraceae	Malaipirandai	Leaf	Fresh leaves are ground with water and the juice obtained is given orally to cure stomach problems in cattle
3.	<i>Acacia leucophloea</i> Willd.	Fabaceae	Vel-velam	Stem bark	The stem bark is ground with the stem bark of <i>Terminalia arjuna</i> and seeds of <i>Cuminum cyminum</i> along with little amount of cow milk. The juice thus obtained is given to cure insect bite in cattle.
4.	<i>Annona squamosa</i> Linn.	Annonaceae	Seetapalam	Seeds	Seeds grind with the leaves of <i>Lawsonia inermis</i> and <i>Nicotiana tobaccum</i> applied externally to cure tick bitten in cattle.
5.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vembu; Veppamaram; Veppam	Leaf and seeds	Leaf juice is added with 50 ml leaf juice of <i>Datura metal</i> , 50 ml leaf juice of <i>Cissus quadrangularis</i> . The mixture is mixed with water and made a paste. The paste is applied externally to cure lice infestation in cattle.
6.	<i>Basella alba</i> L.	Basellaceae	Pasalikkerai	Leaf	Leaf is mixed with the leaves of <i>Justicia adhatoda</i> , pepper and garlic and made into paste. The mixture is given to cure debility and body weakness in cow and goat.
7.	<i>Carrisa carandas</i> Linn.	Apocynaceae	Kalaka	Root and leaf	Root and leaf are ground with leaves of <i>Dodonaea angustifolia</i> , ginger, pepper and pork muscle oil. The paste is given orally to cure ephemeral fever in cow.
8.	<i>Cissampelos pareira</i> L.	Menispermaceae	Ponmoototai	Leaf and root	A handful of roots of the plant is added with the roots of <i>Polygala chinensis</i> and <i>Rauvolfia serpentina</i> ground into paste and taken orally for scorpion stings in cattle
9.	<i>Curcuma amada</i> Roxb.	Zingiberaceae	Mangl ingi	Rhizome	Rhizome is dried, powdered and stored. A small amount of powder is taken, mixed with little amount of coconut oil, made into paste and applied to treat scabies in cattle.
10.	<i>Desmodium grans</i> DC.	Leguminosae	Tholukkani	Leaf	Leaves are ground with leaf of <i>Sida glutinosa</i> and <i>Mimosa pudica</i> and made into juice and given orally to treat glossitis in cattle
11.	<i>Drosera burmannii</i> Vahl.	Droseraceae	Alukanni	Whole Plant	Whole plant paste is given to cure urinary tract infection in cow
12.	<i>Embelia ribes</i> Burm.	Myrsinaceae	Vayavidangam	Root	A handful of roots ground in lemon juice or butter milk and juice are taken orally with sugar/jiggery to cure rhinitis in cattle.
13.	<i>Hibiscus cannabinus</i> L.	Malvaceae	Pulichaikerai	Leaf and flower	Leaves ground with little amount fruit of <i>Tamarind indica</i> is applied on ring worm in cattle.
14.	<i>Impatiens balsamina</i> L.	Balsaminaceae	Kasithumbai	Leaf	Leaves are ground with <i>Coccinia indica</i> and little amount of salt and the paste thus obtained is applied on nipple region to remove wart in nipple in cattle
15.	<i>Lepisanthes tetraphylla</i> Radlk.	Sapindaceae	Karadippongan	Stem bark	Stem bark of this plant is mixed with stem bark of <i>Albizia amara</i> , <i>Pterocarpus santalinus</i> , pepper and garlick. The mixture is boiled with water and the decoction obtained is given to cure haemorrhagi septicaemia in cow.
16.	<i>Naringi crenulata</i> (Roxb.)	Rutaceae	Kattunaragam	Root	Root are mixed with pepper and garlic and given to cure snake bite in cow and goat.
17.	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Naval	Stem bark	Handful of stem bark is made into juice added with a pinch of pepper powder, along with cow milk, and applied externally to

					cure ectoparasites in cattle.
18.	<i>Terminalia chebula</i> Retz.	Combretaceae	Kadukkai	Fruit	Fruit of this plant, leaves of <i>Chloroxylon swietenia</i> and stem of <i>Cissus quadrangularis</i> are mixed with water. The juice is applied externally to cure tick infestation.
19.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thomas	Menispermaceae	Seenthai	Leaf	Leaf is ground with ginger and lime powder. The paste is applied over affected place for maggot wound in cow and goat.

In total, 19 medicinal plants were identified as the remedy for various livestock ailments. Of these, *Azadirachta indica* (40%) had the highest usage. The plant species *Azadirachta indica* was used against the highest number of ailments (8 Nos.), viz., abrasions, anorexia, diarrhea, flu, FMD, horn avulsion, skin infection and tick bites indicating its wider usage. Among the various parts of plants used, leaf had the highest use (76%) followed by rhizome (15%) and flower (9%) and the most frequently used plant type was herbs (35%) followed by trees (30%), shrubs (20%) and climbers (15%). Among the forms of preparations, paste (86%) accounted for the highest, followed by raw (11%) and powder (3%), while between the methods of administration, oral constituted the highest (75%) than the external application (25%).

This study reveals that more than 85% of the Kolli Hills peoples depend for their primary healthcare on folk medicine, mainly on natural medicine. The leaves are the predominant part utilized in the treatment of veterinary diseases and most of the plants are used to treat maggot wound, skin infection and other diseases in livestock. The most common diseases of livestock treated using medicinal plants are skin infestation, insect bite, chronic wound, tick bitten, lice infestation, maggot wound, body weakness, bone fracture, dysentery, ephemeral fever, removal of ectoparasites, ulcers, glossitis, urinary tract infection, enteritis, snake bite, etc.

The frequency of ailments recorded in this study is comparable with the common diseases and disorders of livestock reported in India<sup>[9]</sup>. Foot-and-mouth disease is the most frequent health problem seen among the livestock of this region, which is similar to the earlier reports from Coimbatore districts of Tamil Nadu<sup>[5]</sup>. The common veterinary diseases recorded in the present study are also common among the cattle in many states of India<sup>[5, 9]</sup>. The occurrence of such diseases and disorders among livestock is often linked to inadequate husbandry practices, poor hygiene in the livestock housing area, improper use of tools, lack of appropriate preventative measures<sup>[7]</sup>. Diseases act as a negative influence on the livestock production system, thus setting off a cascading effect on production, low income, and livelihood. These plants are also used by tribes and other indigenous people in India and elsewhere for treating various diseases among livestock<sup>[2]</sup>.

Different types of preparation made from medicinally important plants included paste, juice, decoction, and the whole plant of extract. Most of the reported plants in the different types of tribal people in India for the treatment of various diseases in livestock and was reported by<sup>(8)</sup>. The low cost and almost no side effects of this traditional preparation with medicinal plants make them adaptable by the local community. The documentation of this knowledge is valuable for further generation and for scientific consideration of wider uses of traditional knowledge in treating livestock animals.

## Conclusion

The indigenous knowledge is passed from generation to generation in an oral manner. Documentation of this knowledge is valuable for the communities and their future

generations and for scientific consideration of wider uses of traditional knowledge in treating domestic animals. The low cost and no side effects of these traditional preparations with medicinal plants make them adaptable by the local community. The wealth of this traditional knowledge of medicinal plants points to a great potential for research and the discovery of new drugs to cure the diseases of animals. So, further scientific assessment of these medicines for phytochemical, biological, and clinical studies greatly needed.

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